



Australian Government

FBPOPR2036 Operate an extrusion process

Release: 1

FBPOPR2036 Operate an extrusion process

Modification History

Release	Comments
Release 1	This version released with FBP Food, Beverage and Pharmaceutical Training Package Version 1.0

Application

This unit of competency describes the skills and knowledge required to set up, operate, adjust and shut down an extrusion process.

This unit applies to individuals who work under general supervision and exercise limited autonomy in a food processing environment. It typically applies to the production worker responsible for applying basic operating principles to the operation and monitoring of an extrusion process and associated equipment.

All work must be carried out to comply with workplace procedures, in accordance with State/Territory work health and safety, and food safety regulations, legislation and standards that apply to the workplace.

No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Operational (OPR)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare for work in extrusion processing area	1.1 Confirm materials are available to meet operating requirements 1.2 Identify and confirm cleaning and maintenance requirements and status according to work health and safety and food safety requirements

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.3 Wear appropriate personal protective clothing and ensure correct fit
2. Prepare the extrusion equipment and process for operation	2.1 Enter processing and operating parameters as required to meet safety and production requirements 2.2 Check equipment performance and adjust according to production requirements 2.3 Carry out pre-start checks according to work health and safety and operating procedures
3. Operate and monitor the extrusion process	3.1 Deliver ingredients and additives to the extrusion process in the required quantities and sequence 3.2 Monitor preparation of the mass to confirm that specifications are met and mass is suitable for extrusion 3.3 Start, operate and monitor the extrusion process for variation in operating conditions according to workplace procedures 3.4 Identify, rectify and report out-of-specification equipment, product or process outcomes according to workplace requirements 3.5 Follow and apply workplace housekeeping and environmental procedures
4. Shut down the extrusion process	4.1 Identify the appropriate shutdown procedure 4.2 Shut down the process according to work health and safety and operating procedures 4.3 Identify and report maintenance requirements according to workplace procedures 4.4 Maintain workplace records according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	Interpret workplace and standard operating procedures relevant to

Skill	Description
	job role Interpret production requirements
Writing	Record operating, routine maintenance and shutdown information on paper-based and electronic media
Numeracy	- Monitor and interpret production and process control indicators and data - Monitor supply and flow of materials to and from the process
Navigate the world of work	- Apply workplace procedures to own role and responsibilities - Identify skills, knowledge and experience required for performing own role in the workplace - Ask questions to clarify understanding or seek further information
Interact with others	- Communicate and report operational and safety information to relevant personnel - Use modes of communication suitable to purpose to confirm understanding when conducting operational start-up and shutdown procedures
Get the work done	- Access and interpret process control panels and system - Maintain a clean and hazard-free work area - Identify out-of-specification standards and maintain quality specifications - Confirm equipment status and condition - Interpret process and equipment information to monitor process and respond to abnormal performance and variations

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPOPR2036 Operate an extrusion process	FDFOP2036A Operate an extrusion process	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volumes, including Implementation Guides, are available at VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>

Assessment Requirements for FBPOPR2036 Operate an extrusion process

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Performance Evidence

An individual demonstrating competency in this unit must satisfy all of the elements and performance criteria of this unit.

There must be evidence that the individual has operated an extrusion process on at least one occasion, including:

- accessing workplace information to identify processing requirements
- selecting, fitting and using personal protective clothing and/or equipment
- confirming supply of necessary materials/ingredients and services
- conducting pre-start checks, including:
 - inspecting equipment condition to identify any signs of wear
 - selecting and fitting appropriate attachments where required
 - setting processing parameters
 - cancelling isolation or lock-outs as required
 - confirming that equipment is clean and correctly configured for processing requirements
 - positioning sensors and controls correctly
 - ensuring any scheduled maintenance has been carried out
 - confirming that all safety guards are in place and operational
- starting, operating, monitoring and adjusting process equipment to achieve required outcomes, including monitoring control points and conducting inspections as required at each stage of the extrusion process to confirm process remains within specification, including:
 - parameters, including throughput
 - load/work input as measured by rpm (revolutions per minute)
 - kilowatts
 - amps and/or Hz (hertz) at each stage of the process
- monitoring supply of materials to and from the extrusion process
- taking corrective action in response to out-of-specification results
- responding to and/or reporting equipment failure within level of responsibility

- locating emergency stop functions on equipment
- following isolation and lock-out/tag-out procedures as required to take process and related equipment off-line in preparation for cleaning and/or maintenance within level of responsibility
- completing workplace records as required
- maintaining work area to meet housekeeping standards
- using process control systems according to workplace procedures
- cleaning and sanitising equipment according to workplace procedures
- following relevant work health and safety procedures.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- purpose and basic principles of each part of the process, including the purpose and methods used to achieve each stage of the extrusion process
- basic operating principles of equipment used for the extrusion process, including:
 - main equipment components
 - status and purpose of guards
 - equipment operating capacities and applications
 - the purpose and location of sensors and related feedback instrumentation
- services required for the extrusion process and action to take if services are not available
- the flow of the extrusion process and the effect of outputs on downstream processes
- quality characteristics of extruded output, including required characteristics of mass or blend to be extruded, including:
 - gelatinisation and viscosity
 - dimensions, texture and hardness of extruded product
 - moisture content
- effect of variation in inputs and/or services on process performance
- operating requirements and parameters and corrective action required where operation is outside specified operating parameters, including the effect of variation in key variables, including:
 - throughput and work input at each stage of the process
 - effect of time and temperature
 - barrel pressures and temperatures at each zone
- typical equipment faults for the extrusion process and related causes, including signs and symptoms of faulty equipment and early warning signs of potential problems, including:
 - screw and barrel assembly wear
 - die plate wear
 - wear of conditioner paddles
 - extruder knife condition

- methods used to monitor the extrusion process, including inspecting, measuring and testing as required by the process
- inspection or test points (control points) in the process and the related procedures and recording requirements
- common causes of variation in the operation of the extrusion process and corrective action required
- contamination risks related to the extrusion process and related control measures
- work health and safety hazards and controls relevant to the operation of the extrusion process
- requirements of different shutdowns as appropriate to the process and workplace production requirements, including emergency and routine shutdowns and procedures to follow in the event of a power outage
- isolation, lock-out and tag-out procedures and responsibilities required for the operation of the extrusion process
- procedures and responsibility for reporting production and performance information
- environmental issues and controls relevant to the extrusion process, including waste/rework collection and handling procedures related to the process
- basic operating principles of process control, including the relationship between control panels and systems and the physical equipment
- cleaning and sanitation procedures required for the extrusion process.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
 - a workplace or an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - personal protective clothing and equipment
 - extrusion and related equipment and services
 - ingredients/blend/mass to be extruded
 - sampling schedules and test procedures and equipment
 - cleaning procedures, materials and equipment
- specifications:
 - work procedures, including advice on safe work practices, food safety, quality and environmental requirements
 - information on equipment capacity and operating parameters
 - production schedule/batch instructions
 - specifications, control points and processing parameters
 - documentation and recording requirements and procedures.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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